2008 Planning Community of Practice Conference San Antonio, TX

Willamette Sustainable Rivers Project: Managing Flows for Biodiversity

Leslie Bach, The Nature Conservancy
Chris Budai, Army Corps of Engineers
Matt Rea, Army Corps of Engineers
Mary Karen Scullion, Army Corp of Engineers

Existing Corps of Engineers Infrastructure

13 Reservoirs
- 11 Multiple-purpose
- 2 Re-regulating

Navigation Channel
- Portland Harbor to Corvallis
- 132 River Miles

Willamette Falls Locks

Willamette Bank Protection Program
- 100 miles of revetments

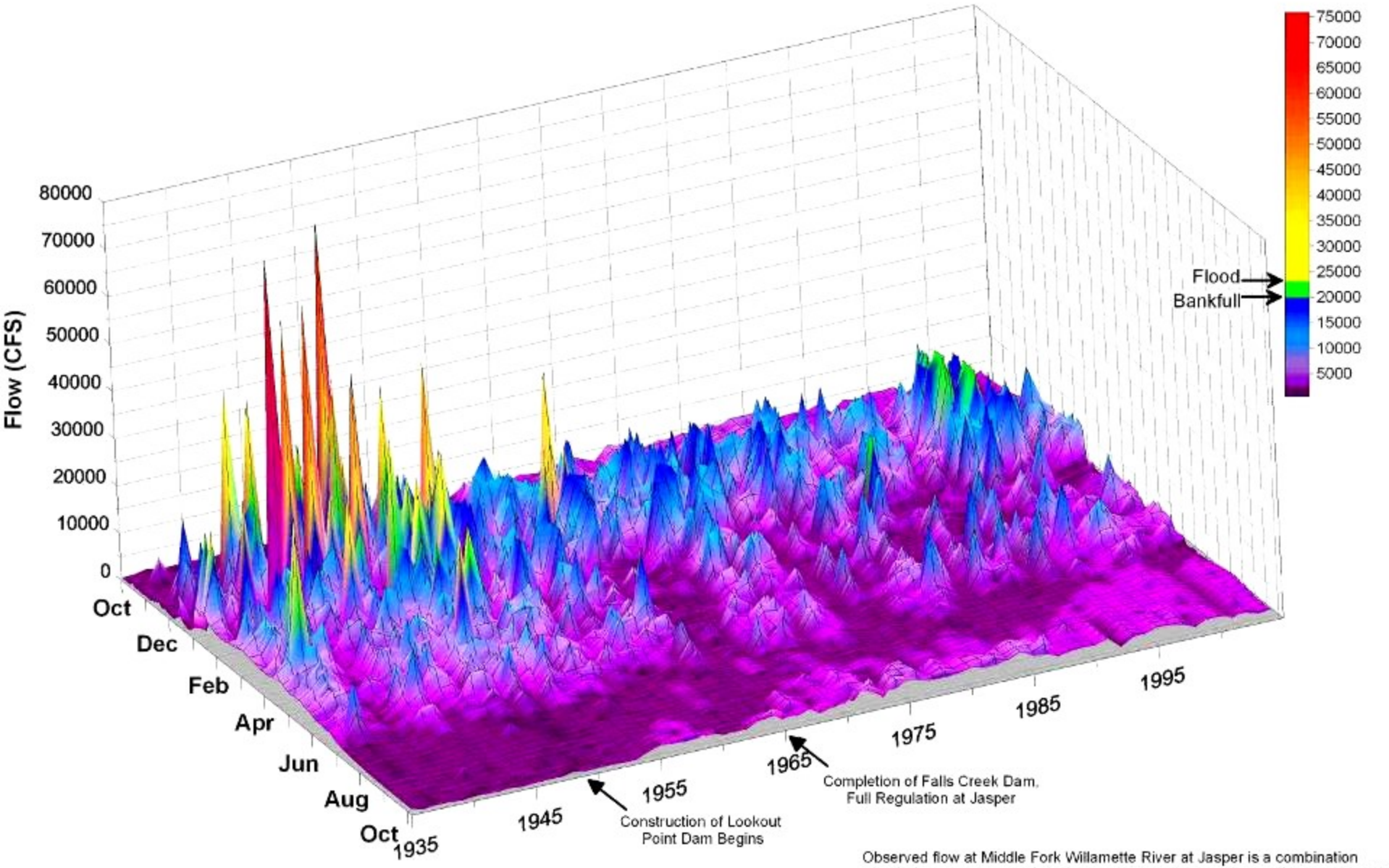
Authorized Purposes of the Dams

- Flood Control
- Hydropower
- Navigation
- Irrigation
- Fish & Wildlife
- Recreation
- Water Quality
- Municipal & Industrial

Willamette Basin Project

- Diverse Stakeholder Base
  - Multiple Watershed Councils
  - 5 Federal Agencies
  - 12 State Agencies
  - 10 Municipalities
  - Multiple Civic / Stakeholder Organizations
- Endangered Species Act Listings
- Clean Water Act

Observed Flow at Middle Fork Willamette River at Jasper, OR

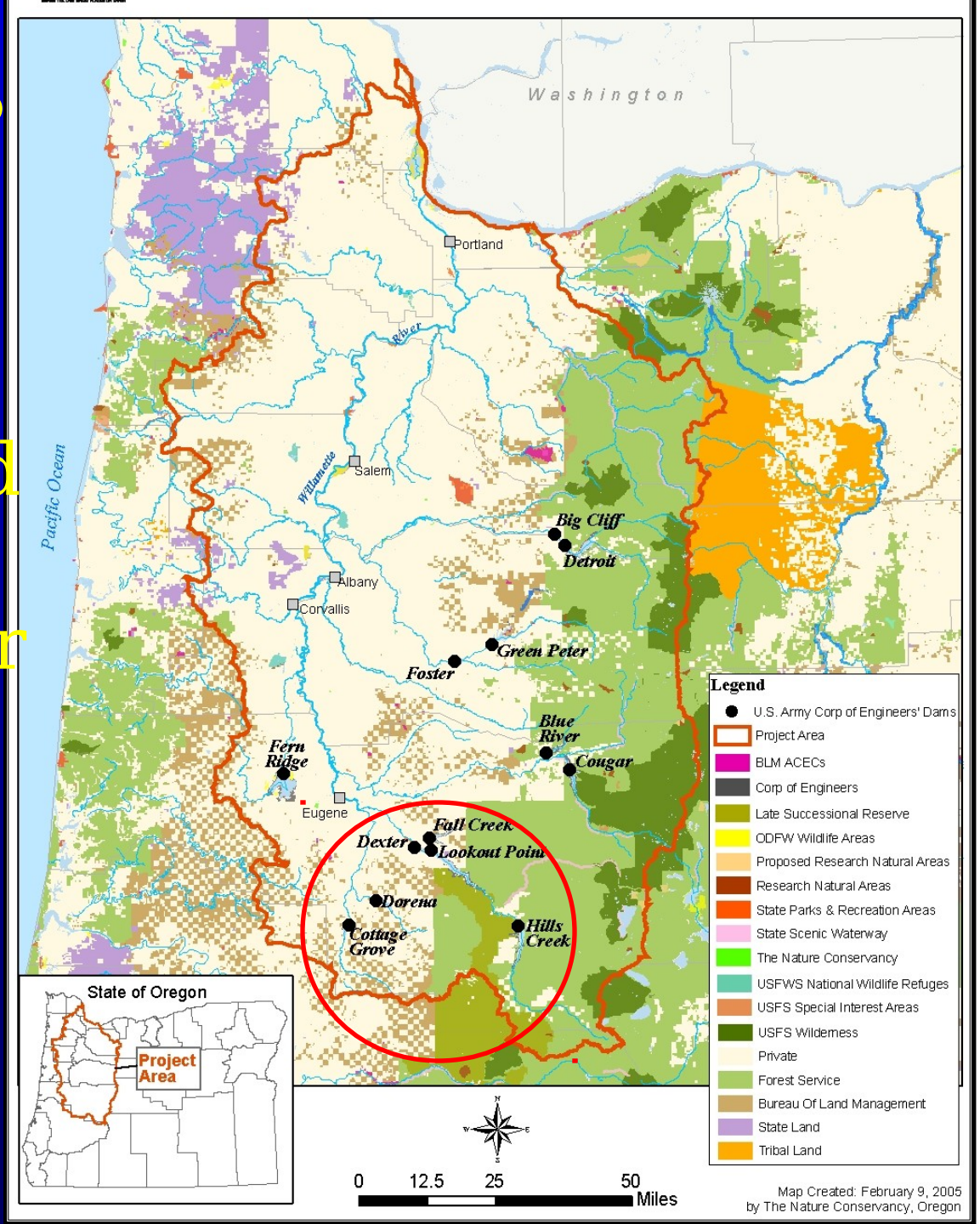


Observed flow at Middle Fork Willamette River at Jasper is a combination of calculated estimates of discharge (1935-1951) and data collected at USGS station 14152000, Middle Fork Willamette River at Jasper, OR (1952-2004).

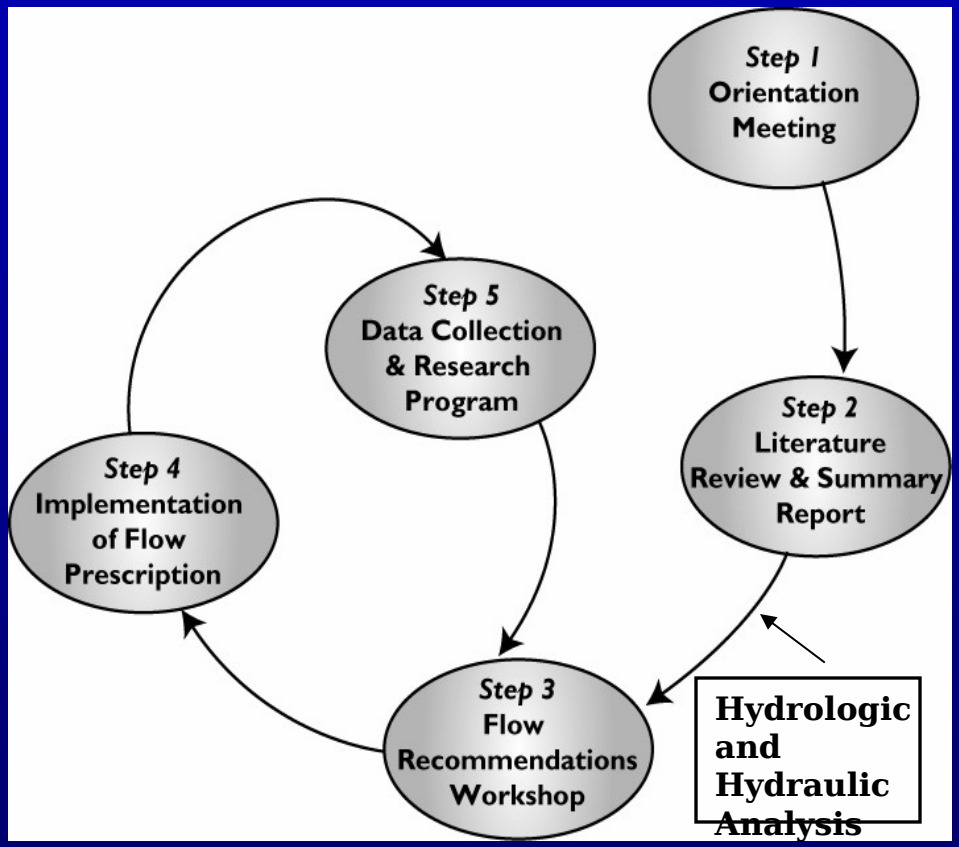
Willamette SRP

Phase 1:

Middle Fork and Coast Fork Willamette River



Process for Developing and Implementing Environmental Flow Recommendations



Orientation Meeting, February 2006: 86 individuals, 34 entities (cities of Portland, Eugene, Springfield, Corvallis)

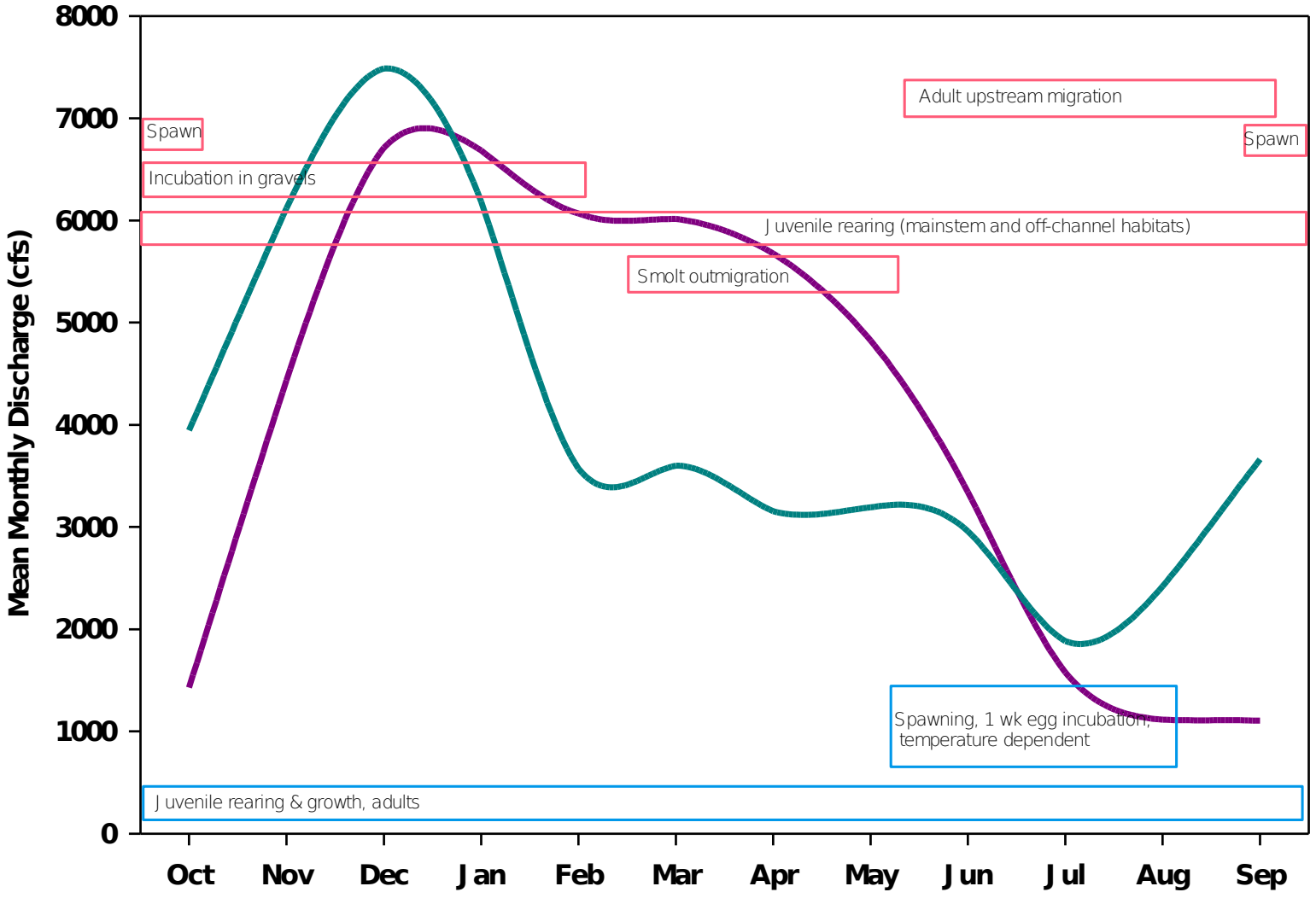
Literature Review/Summary Report – Oregon State University, Dec 2006

Flow Workshop, Jan 2007: 43 individuals, 14 agencies, universities, organizations

Spring Chinook (*Oncorhynchus tshawytscha*), Middle Fork run

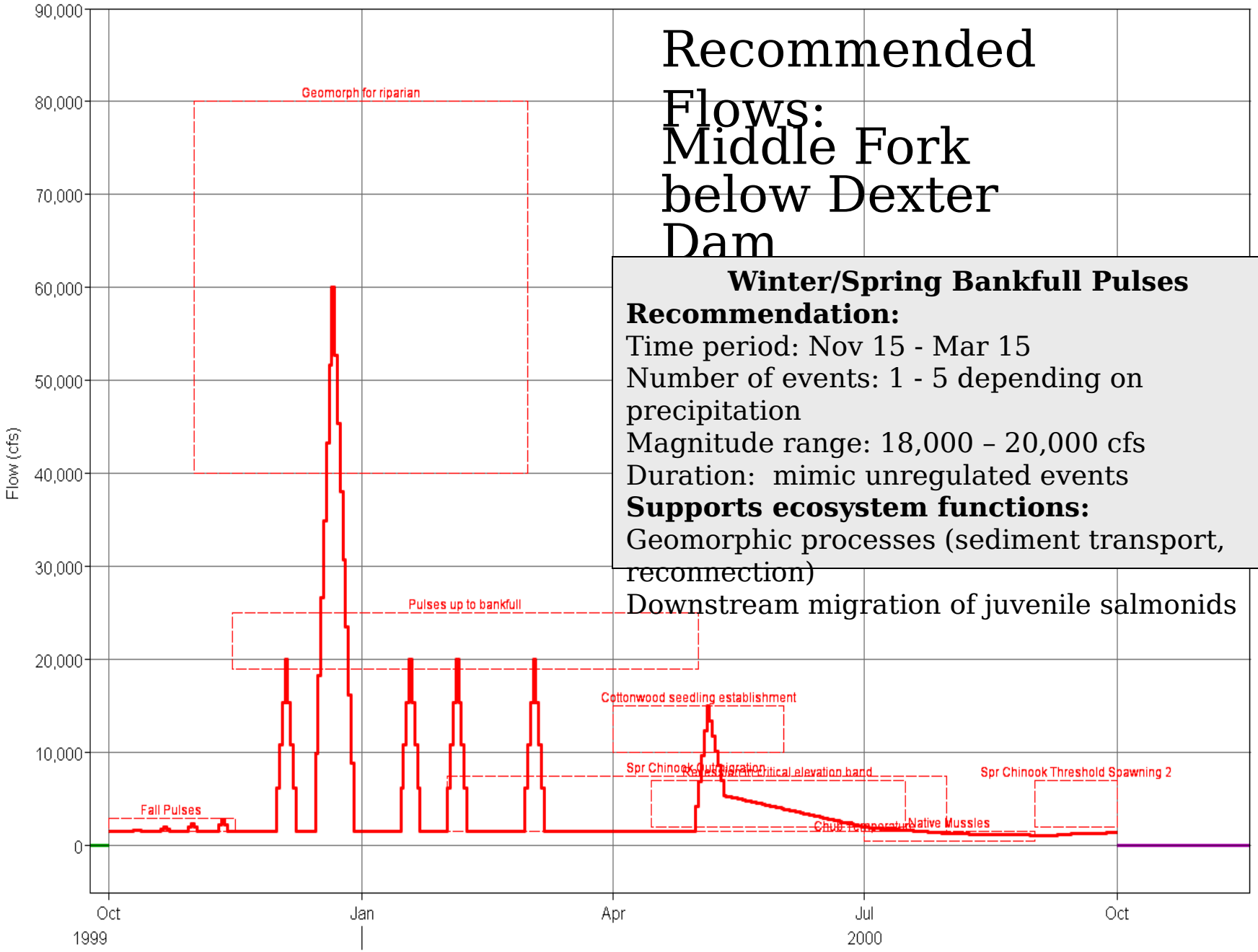
Oregon Chub (*Oregonichthys crameri*)

Middle Fork at Jasper, 1971-1994



From: Linda Ashkenas and Stan Gregory, Oregon State University

Recommended Flows: Middle Fork below Dexter Dam



Winter/Spring Bankfull Pulses

Recommendation:

Time period: Nov 15 - Mar 15

Number of events: 1 - 5 depending on precipitation

Magnitude range: 18,000 – 20,000 cfs

Duration: mimic unregulated events

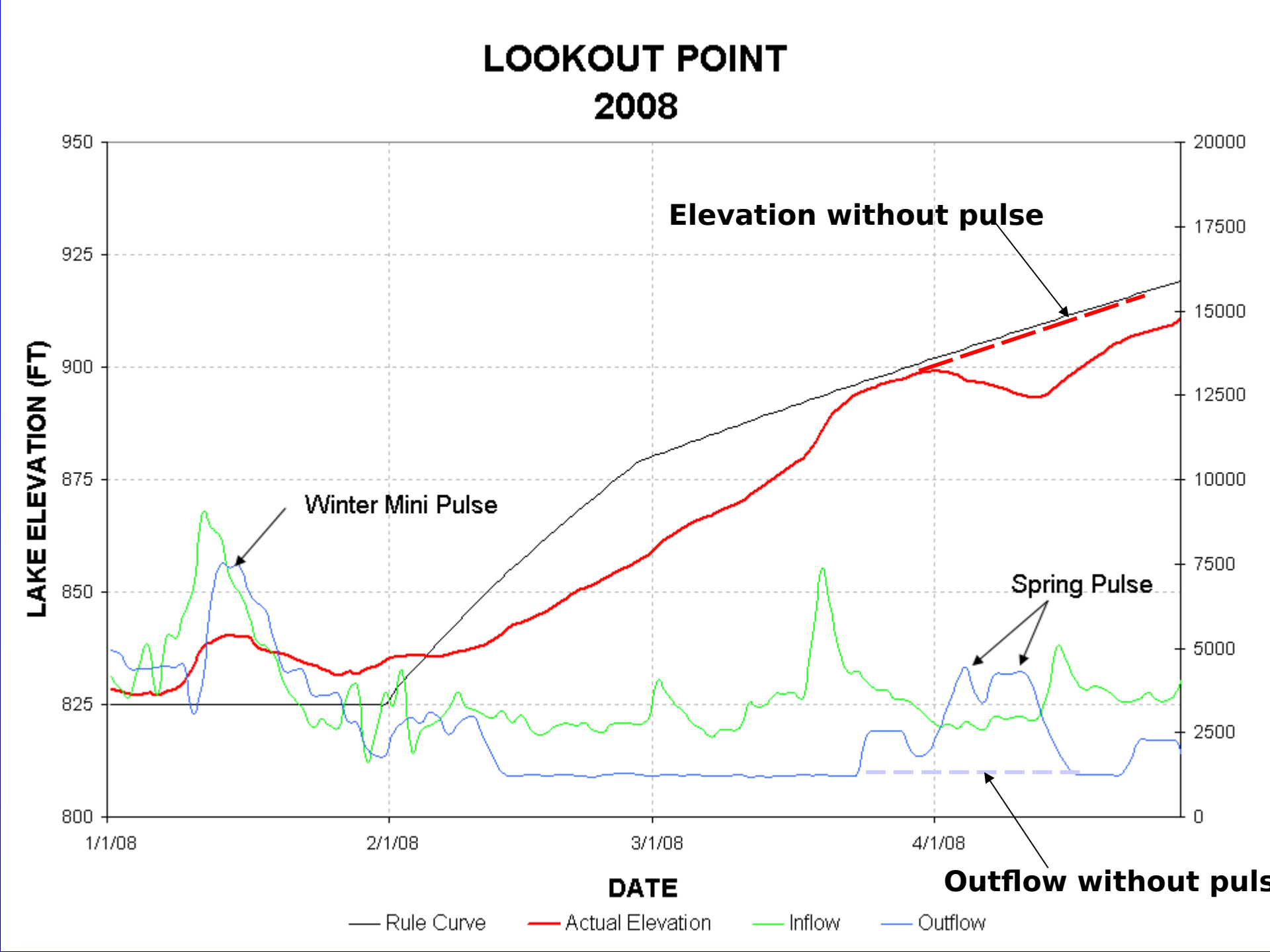
Supports ecosystem functions:

Geomorphic processes (sediment transport, reconnection)

Downstream migration of juvenile salmonids

Results of First Season

- Fall Pulses
  - 2 Pulses Conducted in late September and mid-November (4,200 – 4,400 cfs at Jasper)
- Winter Pulses
  - 1 Pulse Conducted in late November 07 (9,500 cfs) and mid-December 08 (10,800 cfs at Jasper)
  - 1 Pulse Conducted in Jan 08 (12,500 cfs at Jasper)
  - No Bankfull Pulses (BF is 20,000 cfs at Jasper)
- Spring Pulses
  - 2 Pulses Conducted in April 08 (5,200 cfs at Jasper)


LOOKOUT POINT
2008
LAKE ELEVATION (FT)
950
925
900
875
850
825
800
20000
17500
15000
12500
10000
7500
5000
2500
0
1/1/08
2/1/08
3/1/08
4/1/08
DATE
Elevation without pulse
Winter Mini Pulse
Spring Pulse
Outflow without puls
Rule Curve
Actual Elevation
Inflow
Outflow

Challenges/Issues

- Flow Management
  - Weather/Forecasts
  - Reservoir Storage
  - Ramp Rates
  - Turbine Capacity
  - Potential D/S flooding if pulse causes river to exceed bankfull
  - Public Notification

Challenges/Issues continued

- Transition from Planning to Implementation
  - Balance between competing needs/uses
  - Guidance/Policy for e-flow
- Funding
  - Flow recommendations: GI Study
  - Implementation: O&M?
  - Monitoring & Evaluation: O&M?
  - Permanent Operating Manual Revision: O&M?

Next Steps

- Continue Middle/Coast Fork Flow Modifications
  - Integrate e-flows into annual flow management planning cycle
    - More Pulses
    - Monitor and Evaluate
    - Adaptive Management
- Develop Flow Recommendations for McKenzie
  - TNC has grant to initiate work

Lessons Learned

- Include all offices involved up front
  - Engineering, H&H, Reservoir Control, Operations
- Implementation currently limited by flow management policy/guidance
- Need for a broader view of how ecological flows work and integrate with other project purposes
- Need to develop better understanding of ecological benefits and potential impacts of flow releases
- Monitoring and adaptive management are important components of the project